

貴州新發見的腫肋龍化石

楊 鍾 健

(中國科學院古脊椎動物研究所)

本文所記述的新腫肋龍化石屬鱗龍目，為首次在中國發見的這一類的豐富化石。其材料根據地質部地質陳列館胡承志等在貴州興義頂効大寨浪寨所採集的八個標本和古脊椎動物

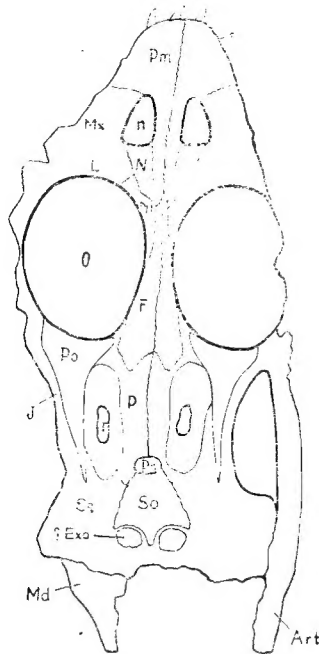


圖 1 胡氏貴州龍, 新屬新種 (*Keichousaurus hui* gen. et sp. nov.), 頭骨 (見圖版 I 圖 1) 背面視。圖上畫的骨縫僅為可見到的, 但也可能稍有改變。簡字說明與一般所採用者同。× 3。

Fig. 1. *Keichousaurus hui* gen. et sp. nov. Skull (cf. plate 1, fig. 1.) in dorsal view. Only the traceable sutures are showing or with slight modification. Abbreviations of lettering as generally adopted. $\times 3$ nat. size.

研究所通過貴州博物館曹澤田等二人所採的同一地點的七個標本。這些標本，雖大小不一，但無疑的歸於一種。

雖然經過兩次採集,但是關於地層方面的資料搜集得很少,尤其是上下層位關係等均沒有什麼依據,從科學出版社出版的中國區域地層表第 94 表(貴州西南部的地層)和許德佑在野

外和室內所作的一些工作來判斷,這一含化石層可能是所謂關嶺統的一部分。

兩次採集的標本,就岩石性質看,有些完全相同,有些少有出入,但無論如何充當為一個化石層的可能性非常之大。

十五個標本的詳細說明見英文表一。

經比較研究斷定:貴州興義的標本為屬於腫肋龍亞目腫肋龍科的一個新屬新種,名曰胡氏貴州龍。其特性雖與腫肋龍屬(*Pachypleurosaurus*)相近,但頭骨最寬處位於眼眶之旁,嘴部尖

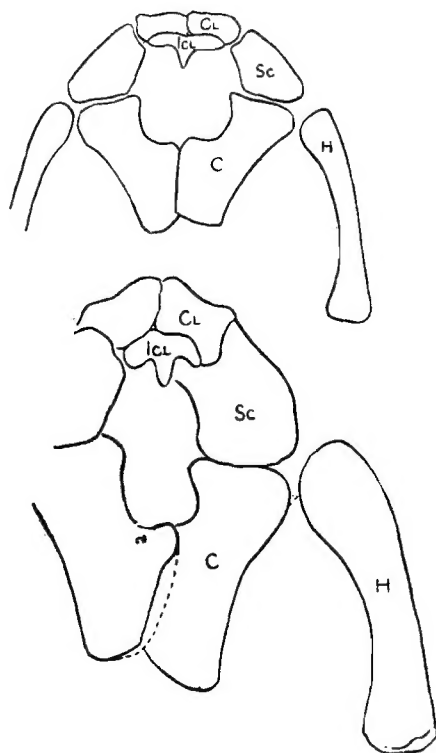


圖 2 胡氏貴州龍,上圖, V956c 的肩帶腹面觀,原大的 1.5 倍。下圖 Vm003 的肩帶腹面觀,原大的 1.5 倍。

Fig. 2. *Keichousaurus hui* gen. et sp. nov. Upper figure, Pectoral girdle of V956c in ventral view. $1.5 \times$ nat. size. Lower figure, pectoral girdle of Vm003 in ventral view. $1.5 \times$ nat. size.

小,微與根部分化。頸比較長,肋骨特顯腫大,脊椎骨數為:頸 20,背腹 20,坐骨 3—4,尾在 37 以上。尺骨與腓骨短寬。

在鑑定中,選擇了 V952 為正型標本,這一標本從背面看,保存得特別完好。其他如 V953, V956b, 以及 Vm002, Vm003 (地質陳列館編號)作為副型。其他的標本僅作參考用。

在全部採集中,共發現三個頭骨,其中以 V952 最為完整清晰。其他兩個所代表的為腹面,並均有部分下顎片保存在原來位置。

頭骨的輪廓爲三角狀，其長度約爲頭部的 $2/5$ 。最特殊的性質是眼孔特別大，顛顛孔特別小，作豆狀。比橢圓狀的三角形鼻孔爲小。頭骨最寬處位於眼孔側旁。眼後部分很窄，也約與眼孔同長。顛頂骨的孔很清楚，位於較後部。一般性質與腫肋龍很相近。

兩腹面保存的頭骨只有翼狀骨附近較清楚，其他均不易辨別，特別是各骨間的界限非常不清楚。

僅 V952 號標本局部保存有下顎骨。其他兩頭骨的下顎骨也只有腹側保存。

牙齒爲同一式，表現得十分清楚。在 V952 號標本上只保存有四個前顎的牙。牙齒細小而尖銳，齒與齒間有間距，大小相若。在正型標本上，其他牙齒均未保存。在 Vm002 的標本上有一相當大的左牙（在標本的左側）可能爲上牙。其間有若干小牙，可能爲下牙。下牙數約爲 17。在 Vm0025 的標本上，只有一些牙痕。所有牙齒均爲同一式，並且排列得稍鬆。

所有肋骨，都保存得相當好，而且均具有病態的腫的性質。肋骨頂端粗大，幾等於（或者略小於）所接的脊椎骨。有相當一段肋骨與脊椎相垂直。以後即很利害地彎曲，幾成直角，每

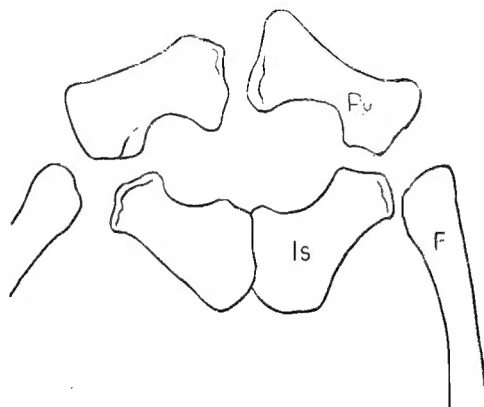


圖 3. 胡氏貴州龍, Vm003 的腰帶, 腹面觀, 原大的 1.5 倍。

Fig. 3. Pelvic girdle of Vm003 in ventral view. $1.5 \times$ nat. size.

一肋骨的末端可達以後的四-五脊椎旁邊。肋骨的末端稍尖，並且彼此重疊。以上這些性質都說明我們的標本和腫肋龍非常相同。

荐椎可能爲三個。

關於各部分的大小見表 2，這個大小尺度表明儘管大小有些區別，可能是由於成長期的不同，而不是由於種類的不同。表中較大的數字，都是代表成長的個體，而其他數字爲幼年個體。在另外一方面，肢骨的一般比例以及它們的構造都非常相近，這一事實說明我們的所有標本，均歸於一個種而不是幾個種。貴州與義標本與其他有關屬的比較，請參看表 3。這個表所比較的一共有三屬。

此種化石既與腫肋龍相近，其年代當爲中三疊紀，但由於我們的種較爲特殊化一些，可能較新，爲中三疊紀的上部。

腫肋龍代表最原始的鱗龍目，也是在海邊生存的爬行動物。今在我國西南海相地層中發現，所以極具生物上與地理分佈上的意義，也爲進一步劃分海相三疊紀地層提供了證據。

這些標本，只經初步觀察就可知道是歸於腫肋龍這一亞目的。頭骨的性質，特別是小的顳顬孔（比鼻孔小），非常大的眼孔以及同一式的牙齒等均說明歸於這一亞目，這一點無需更多的討論就可解決。同時我們的化石應歸腫肋龍這一科。因為這一目只有兩科，而另一科，*Proneusticosauridae*，只有一個屬，*Proneusticosaurus*，而這一屬特別大，不可能在考慮之列。

腫肋科，照許耐氏最近的分類，一共有五屬，我們的標本與之比較，却多少有些不同，有些區別相當顯著。上面所說的在頭骨方面的一些特性以及較長的頸脊椎部分和寬闊的尺骨，證明與義的化石代表這一科的一個新屬，特定名為胡氏貴州龍，用以紀念最初探到此一化石的胡承志同志。胡氏貴州龍的主要特徵如下：

大小適中的腫肋龍，其頭骨的顳顬孔很小，比鼻孔小，眼孔大，頭骨最寬處即位於其側。嘴部小而尖，底部微呈收縮狀。牙齒為同一式。脊椎數大約為：頸 20，背椎 20，荐椎 3 或 4，尾椎 37 以上。脊椎的背棘低，頸肋發育很好。背肋呈腫粗現象。荐椎末彼此骨連。頸相當長。肱骨與股骨的長短大致相等，但後者較細小。尺骨短而寬。脛骨與腓骨也較短粗。前肢趾數為 3、4、4、4、3。後肢趾數為 2、3、3、4、2。

就一般性質說來，貴州龍和腫肋龍最為相近。但因它具有較長的頸，以及上面所指出的在頭骨方面的性質和肢骨的性質再加上有較大烏喙骨和坐骨，所以它似乎比歐洲的這屬更為特殊化一些。因此它的地質年代可能更晚一些，應當為中上三疊紀（腫肋龍為中下三疊紀）。

胡氏貴州龍的發見代表原始的鱉龍類在整個亞洲第一次的發現。日本所發見的異幻龍（為一真正的幻龍）比我們的大得多。此外，威遠中國蛇頸龍的年代特晚，為上侏羅紀，所以在此無考慮的必要。

特別值得指出的是：在中國西南的胡氏貴州龍生成的相和在歐洲阿爾卑山中特辛耐石炭相十分相近。這一事實再加上在以色列的類似發見使我們能更好地瞭解地中海在中生代的分佈情況。

據貴州博物館同志的報告，與義這一化石地點的化石早已為當地農民所知，並有時採作禮物或作為奇品保存。因此我們現在所掌握的材料不過是其中一小部分罷了。

ON THE NEW PACHYPLEUROSAUROIDEA FROM KEICHOW, SOUTH-WEST CHINA

YOUNG CHUNG-CHIEN

(*Institute of Vertebrate Paleontology, Academia Sinica*)

Introduction

In the summer of 1957, Messrs. C. C. Hu and N. H. Niu of the Museum of Geology, Ministry of Geology collected a number of more or less well preserved Sauropterygian remains from Langmu, Tachai village, Tingshao of Shingyi Hsien, S. W. Keichow¹⁾. This interesting

1) 貴州、興義、頂效、大寨村、浪幕。

find represents the first rich and determinable marine reptiles in China¹⁾. There are no detailed comments on the stratigraphical relationship of the fossils, but it is highly probable that the fossils in question may be derived from the Kuanling Series (Anonymous, 1956, table 94). Unfortunately there is no trace of other described fossils of invertebrates found together with the reptiles, so that a further comparison with the rich invertebrate fauna of the same series is not possible at present²⁾. The rocks containing the fossils are greyish white, sometimes dark gray, thin layered limestones or shales which fit well with the description of the above mentioned table of stratigraphy of S. W. Keichow.

Subsequently, through the kindness of Mr. T. T. Ts'ao of the Keichow Museum, the Institute of Vertebrate Palaeontology, Academia Sinica, obtained seven pieces of apparently the same species from the same district and the same stratigraphical horizon, as the fossils and the lithological characters are exactly the same as those in the collection of the Museum of Geology.

In the present note the writer will try to give a preliminary description of all the fossils of the two collections. Acknowledgments should be deeply expressed to the authorities of the Museum of Geology as well as to Messrs. Hu and Niu and especially Mr. T. T. Ts'ao of the Keichow Museum. Without their kindness the present study can not be accomplished.

Description

Order Sauroptergia

Sub-order Pachypleurosauroida Huene

Family Pachypleurosauridae Huene

Genus *Keichousaurus* Gen. nov.

(With the diagnosis of the type species *Keichousaurus hui* sp. nov.)

Material: The following description is based on the specimens of the two collections enumerated below (in table 1):

Horizon and locality: All the fossils, 15 individuals, were derived from the same locality, namely Langmu, Tachai Village, Tingshiao, Shingyi Hsien, S. W. Keichow Province, Middle Triassic.

Diagnosis: See the section of discussion.

1) The first determinable marine reptile was described as *Sinopliosaurus weiyuanensis* from Weiyuan, Szechuan (Young, 1944).

2) Remains of Sub-holostei (probably Peltopleuridae) and Holostei (probably Semionotidae and Caturidae) including at least three species (Kind personal communication of H. T. Liu) and shrimps were brought to the Institute by T. T. Ts'ao. Although the lithological characters are not exactly identical, yet it is highly probable that all the fossils were derived from the same general horizon.

Table 1 Specimens at disposal

表 1. 材料保存情況

Cat. no. of specimens 標本編號	Aspect shown 化石在岩石上暴露出來的面	Mode of occurrence 保存情況	Nature of the matrix 岩石性質	Remarks 備註
V952*	Dorsal aspect 背面觀	Skull and neck in black colour 頭骨和頸, 黑色	Dark grey limy shale with the weathered surface greyish white 黑灰色石灰質頁岩, 風化面灰白色	Adult 成年個體
V953	Ventral aspect 腹面觀	Right part of the trunk with the anterior part of the tail and the right limbs 體軀右側, 尾前部和右肢。	Dark grey limy shale with the weathered surface greyish white 黑灰色石灰質頁岩, 風化面灰白色	Adult 成年個體
V956a	Dorsal aspect 背面觀	Part of the neck, anterior body with the left limb 頸的一部份, 身體前端和左肢。	Dark grey limy shale with the weathered surface greyish white (同上)	Young 幼年個體
V956b	Ventral aspect 腹面觀	Entire body with, pos. part of the neck and ant. part of the tail and limbs 完正個體, 頸的後部和尾的前部, 以及四肢	light grey shale 淺灰色頁岩	Young 幼年個體
V956c	Ventral aspect 腹面觀	Nearly complete neck and anterior part of the body with pectoral girdle 近完正, 頸和體前部, 有肩帶	light grey shale 淺灰色頁岩	Adult 成年個體
V954	Ventral aspect 腹面觀	posterior part of the body and limbs and anterior part of the tail 身體後部。部份四肢和尾前部。	thin grey shale 薄層灰色頁岩	Adult 成年個體
V955	Dorsal aspect 背面觀	Nearly complete, neck curled with the head concealed, complete trunk and anterior part of the neck, limbs mostly lost. 近乎完正, 頸彎曲, 頭隱藏, 體軀和頸前部完正, 四肢大部缺失。	Limy shale. 石灰質頁岩	Adult 成年個體
Vm002**	Ventral aspect 腹面觀	A complete specimen 完正標本	Greyish white shale 灰白色頁岩	Young 幼年個體
Vm0025	Body in dorsal aspect, head in ventral aspect 身體背面觀, 頭腹面觀。	Body without tail, badly preserved 有身體無尾, 保存不佳。	Shale 頁岩	Young 幼年個體

Vm001	Dorsal aspect 背面觀	Trunk and anterior part of the tail and limbs 體軀和尾前部, 以及部份 四肢	Dark grey limy shale 深灰色石灰質頁岩	Adult 成年個體
Vm003	Ventral aspect 腹面觀	Entire body with part of neck, tail and limbs 身體全部, 有部份頸部, 尾 部和四肢	Dark grey limy shale 深灰色石灰質頁岩	Adult 成年個體
Vm0013	Dorsal aspect 背面觀	Negative impression 反面印痕	Dark grey limy shale 深灰色石灰質頁岩	Adult 成年個體
Vm0012	Dorsal aspect 背面觀	Unprepared specimen, most part of the skeleton 未經修理的標本, 為骨架 的大部份。	Shale 頁岩	Very young 很年輕的個 體
Vm004 and Vm0014	Fragments 碎片		Shale 頁岩	Young 幼年個體

*Catalogue number of the Institute of Vertebrate Palaeontology.

**Catalogue number of the Museum of Geology

Description of the specimens

From the above enumerated specimens V952 has to be considered as the type, because its skull is well preserved in dorsal view and thus displays many interesting features of the family. V953 and V956b as well as Vm002 and Vm003 serve as paratypes for showing postcranial characters. The other specimens are used as complementary materials for the description.

The skull. There are three skulls in our collections, but the type (V952) is the best one with the dorsal view exceedingly well preserved. The other two (Vm002 and Vm0025) are shown in ventral aspect with the lower jaws in the natural position.

The skull is triangular in outline being about two fifth the length of the neck. In dorsal aspect, the most interesting feature is that the orbital openings are very large, and the temporal openings are small and elongated. The size of the latter is subequal in size and much smaller as compared with that of the nasal openings which are triangularly oval in outline. In both sides the temporal opening is surrounded by a well marked elongated depression. The maximum breadth of the skull lies at the lateral margin of the orbits. The muzzle is very short, about the length of the orbit. The post orbital region is narrow, also about the length of the orbit. The parietal foramen is distinct and situated at the posterior part of the parietal immediately in front of the line across the posterior margin of the temporal openings.

In many cases the configuration of various bones can be traced clearly. The outline of the parietal is about the same as that of *Pachypleurosaurus*, especially the way of its contact with the rather broad supraoccipital. Anteriorly the contact with the frontal is made by the rather transversally orientated zigzag suture. The exoccipital may be indicated by the pit-like bone at the side of the parietal. The frontal is narrow and in direct contact

with the posterior process of the premaxilla at the very posterior position. In this way the small triangular nasal is separated by these two bones. The prefrontal is small as compared with the large lacrymal. The maxilla is only partly shown at the right side and that of the left side is only preserved by the internal mold. The squamosal is deeply inserted by the slender post orbital. The jugal is well shown at the right side and that of the left side is also represented by the impression only. The posterior part of the lower jaw is partly shown but the details cannot be traced on account of the unsatisfactory preservation.

The ventral side of the skull represented by Vm 002 and Vm 0025. Vm 002 is better preserved, and the sutures between the broad and coarsely decorated pterygoids and the prevomer can be partly traced. The others are not so clear, but the general location of the bones as ectopterygoid, palatinal as well as maxilla and premaxilla can be determined with certainty. The nasal opening in Vm 002 seems to be squeezed. In Vm0025 it is still less satisfactorily preserved. There is however no reason to suppose that it differs in any way from that of Vm 002.

The **lower jaw** is only partly preserved in V952. The posterior part of both jaws is shown in ventral view, but no details can be detected. In Vm002 and Vm0025, both jaws are completely preserved in ventral view too.

The **teeth**. In all specimens the teeth are clearly isodont. In V952 only the four premaxilla teeth are preserved. They are well separated and equal in size, slender and pointed. No other teeth can be observed in the type skull. In Vm002 three rather large teeth of the right side are shown at the left side of the specimen which may belong to the upper dentition, and some small ones between them are lower teeth. Traces of teeth are shown in the damaged ventral surface of the lower jaw. The number of the teeth cannot be detected with certainty, but no less than 17 ones are present in the lower jaw. In Vm0025, some nine teeth, represented mostly by impressions, are observable in the left lower jaw (right side of the specimen). In all cases the teeth are isodont and sparsely arranged, although they are rather closely situated by each other.

Vertebrae. Neck vertebrae. In the type specimen, there are 22 vertebrae preserved. It seems that all of them are neck vertebrae, one or two may be missing before the real dorsal vertebrae begin. Most of the neck ribs are well preserved. The proportion with the dorsal vertebrae is not known. The number of the neck vertebrae seems to vary from 22 to 25. But in Vm002 there are about 24 vertebrae and in Vm0025 about 23 vertebrae preserved (in V955 about 22 in V956c about 25). In both of them the total length is only slightly shorter than that of the dorsal vertebrae. In V955, of which the neck is preserved, the neck is even subequal in length with the dorsal vertebrae. In any case, the neck of the present form is considerably longer than that of *Pachypleurosaurus* and is about the same proportion as that of *Neusticosaurus*.

The size of the neck vertebrae shows a slight increase posteriorly, especially in breadth. In the anterior ones, the length is a little longer than the breadth and in the posterior ones the breadth exceeds considerably that of the length. The spina dorsalis

is very weakly developed. In the preserved ribs the base is broad with needlelike ends. In other details it is hard to make a further description on account of the unsatisfactory preservation.

Dorsal vertebrae. The dorsal and the lumbar vertebrae are generally stronger built than the neck vertebrae. In the anterior ones they are subequal in length and in breadth but increasing in breadth posteriorly. The spina dorsalis is also very weak. In ventral view as they are shown in several specimens the centra are rather compressed. The number of the dorsal and the lumbar vertebrae is rather constant. In most of the specimens with those vertebrae preserved, it is 20, and in some ones it seems to be one vertebra less and may be explained by the less satisfactory preservation.

In most cases the **ribs** are well preserved and extensively pachyosteologically developed. The root of the rib is almost equal to or only a little shorter than the length of the corresponding vertebra. For considerable distance the rib is perpendicular to the vertebra column and then bends rather sharply posteriorly, almost in right angle, the tip of which reaches to a distance four to five of the following vertebrae in length. The distal ends of the ribs are sharply pointed and overlap each other. In all these facts it is decidedly more developed than the corresponding feature of *Pachypleurosaurus*.

In no specimen the number of the **sacrum** is clearly shown. But as judged by the better preserved ones, V954 and Vm003, it is most probably composed of three. It is however not impossible that there is one more. In both the two better preserved specimens, it shows clearly that the sacral vertebrae are not co-ossified.

Caudal vertebrae. We have only one specimen, Vm002, with the caudal vertebrae completely preserved which is 37 in number. The last one is so small that the possibility of some more vertebrae in addition is quite improbable. In other specimens the caudal vertebrae are partly preserved (Vm003, 6; Vm001, 10; Vm0013, 8 in impression; Vm0025, 8; V935, 3; V953, 13; V956b, 6; and V954, 18). In the complete specimen, the tail is about twice long compared with the trunk. The anterior caudal vertebrae are strongly built and differ only slightly from the lumbar vertebrae. Their caudal ribs are also well developed and pachyosteological. In the distal direction the caudal vertebrae decrease in size gradually and are of course simplified in structure.

Pectoral girdle and anterior limbs. Only in a few specimens are the pectoral girdle and the anterior limbs tolerably preserved. They are briefly described as follows:

The pectoral girdle. From the better preserved pectoral girdle of V956c, Vm003, V956b and Vm001 one can form a fairly complete idea about its construction. On the whole, the pectoral girdle is very similar to that of *Pachypleurosaurus*. The coracoid represents the most robust bone of the whole girdle. The contact lines of both are rather long. The inner embayment is well defined. The interclavicle is well developed and the trilobate structure well marked. In V956c the upward bending of the right clavicle is clearly observable. The scapula is a short and broad bone and is a little longer than half of the coracoid.

The anterior limbs are better preserved in several specimens, but especially well in V953. As the most characteristic feature of the limb is the unusual broadness and shortness of the **ulna**, it forms almost a plate-like bone with the proximal part broader than the distal part. The **humerus** is considerably stronger than the femur with the distal end rather expanded. The **radius** is slenderly built as usual. Between the distal end of the radius and the ulna there is a rather big bone which is clearly the radiale and intermedium as interpreted by Peyer for *Pachypleurosaurus*. Immediately at the distal end of the ulna the small bone is doubtlessly the ulnare. Both bones are preserved in all the specimens with the anterior limb intact. The metacarpals are long and slender and five in number. Even in the best preserved specimen, V953, we are not so sure about the exact number of the phalanges. The traceable phalanges are 2, 3, 3, 3, 2. Certainly there is an additional one in V which represents the last phalanx. In II the second one is damaged partly and there is a faint trace of the last phalanx in I—V. if so, the exact number should be 3, 4, 4, 4, 3. The given number is at least proved in the third and probably the fourth metacarpals in V953 which are composed of four. All the phalanges are slender and feeble. There is no clear indication of the presence of web, but it is very probably so.

The **Pelvic girdle** and **posterior limb**. There are several specimens with the pelvic girdle preserved, but no one with ilium shown except in Vm001 (dorsal aspect), of which the short and broad bone besides the femur seems to represent the ilium dorsal view. The other two bones are well shown in Vm003, V953, V954 and V956b. Figure 3 shows the structure of Vm003 in position. They are very similarly constructed as in *Fachypleurosaurus* and need no detailed description. However, the pubis of our form seems to be more constricted.

The **posterior limbs** are more or less well preserved in nine specimens of the two collections. Most of them are however only partly preserved or in rather unsatisfactory condition. The following description is mainly based on the most well preserved specimen V953. The **femur** of V953 is equal in length with the humerus (as also in Vm002 and V956b). In Vm002, it is decidedly shorter than the humerus. This may be explained by the difference in age, since the latter represents a full adult specimen. In all cases, the femur is much slender than the humerus with the distal end a little narrowed. Very interesting is the structure of the tibia and fibula which are considerably shorter and broader as compared with those of *Pachypleurosaurus* (better preserved in V954). The tibia is a broad straight bone with the proximal part noticeably expanded and longer than the fibula. The fibula is a weakly constricted bone with a very faint curvature. In most cases the tarsus is well preserved and composed of larger tibiale together with the intermedium and a fibulare immediately below the fibula. The first metatarsus is short, about one half the length of others. The II-V metatarsalia are subequal in length and look stronger than the metacarpalia. Only in V953 the phalanges are best preserved. The preserved ones are: 2, 3, 3, 4, 2. The distal one is missing in III and V, so that it is the same formula as that of *Pachypleurosaurus*.

Table 2 Some important measurements of the better preserved specimens
保存較好的標本的一些重要測量

Total or preserved length 總長或保存部份長	Vm002...204mm (whole length). (全長) Vm0025...190mm (tip of skull to 7th caudal vertebra). (頭骨前端到第七尾椎)
Length of the neck vertebrae 頸椎長度	Vm002, 52mm; Vm0025, 65mm; V956c, 63mm, (not complete)不完整; V952, 64mm
Length from anterior dorsal vertebra to the last sacrum 從最前面體椎到最後荐椎的長度	Vm002, 49mm; Vm0025, 68mm; Vm001, 78mm; Vm0013, 68mm; Vm003, 81mm; V953, 68mm; V956b, 57mm; V955, 82mm.
Length of the caudal vertebrae 尾椎長度	Vm002, 83mm
Length of the skull 頭骨長度	V952, 23.5mm; Vm002, 18.3mm; Vm0025, 22mm
Maximum breadth of the skull 頭骨最寬度	V952, 12.5mm; Vm002, 9.5mm; Vm0025, ?10.2mm
Length and the breadth of the nasal opening of V952 V952 鼻孔的長和寬	4×3mm
Length and the breadth of the orbit opening of V952. V952 眼孔的長和寬	7×5.5mm
Length and the breadth of the temporal opening of V952 顛顛的長和寬	2.5×1.2mm (left) 1.8×1.2mm (right)
Total length of the anterior limb: 前肢總長	Vm002, 23.5mm; Vm003, 58mm; V953, 37.5mm, V956b, 27mm
Total length of the posterior limb: 後肢總長	Vm002, 22mm; V953, 37mm; V956b, 28mm
Length of the humerus: 肱骨長度	Vm002, 15.3mm; Vm003, 27.5mm; V953, 17.5mm; V956b, 11.5mm
Length of the femur 股骨長度	Vm002, 11mm; V003, 24mm; V953, 15.5mm; V956b, 11.5mm

The above given measurements indicate that the size is rather variable, mainly due to the difference in age. All the low figures belong to inadult specimens. On the other hand, the general proportion of limbs and the structure of the skeletons are so constant that the possibility of the presence of another species is positively excluded.

Discussions

Even after the first inspection of the specimens one may easily come to the conclusion that the fossils in question belong to the sub-order Pachypleurosauroidea of Huene. The characteristic structure of the skull, noticeably the smallness of the temporal opening and

large orbit as well as the nature of the teeth etc., makes the further debate unnecessary. It is also evident that our fossils belong to the family Pachypleurosauridae, since the other family Proneusticosauridae represented by the single genus *Proneusticosaurus* is simply too large to be considered here.

Table 3 Some important measurements of the present form compared with some related forms

表 3 貴州龍與相近種類比較的一些重要測量數字

	<i>Keichousaurus</i>	<i>Pachypleurosaurus</i>	<i>Neusticosaurus</i>	<i>Rhaeticonia</i>
Length of the Skull: 頭骨長	23.5mm (V952)	31mm*	30mm	37mm
Total length: 總長	204mm (Vin002)	ca.390mm*	—	310mm
Number of neck vertebrae: 頸椎數目	22—25	15	20	18
Number of dorsal and lumbar vertebrae: 體椎和腰椎數目	20	20	20±	21
Sacrum: 荐椎數目	3 or 4	3 or 4	?	—
Number of the Caudal vertebrae: 尾椎數目	37	37—47	—	31±
Length of the neck: 頸長	52—65mm	56mm*	—	64mm
Length of the trunk: 體長	49—82mm	113mm	—	82mm (without sacra.) 不算荐部

*Directly measured from Peyer, 1932, plate 25.

In the family Pachypleurosauridae there are five genera included. Our form differs from all of them by many anatomical characters. In table three some important genera are listed together with our form for comparison. The special features of the skull, the relative longer length of the neck, the shortness and the broadness of the ulna and tibia and fibula point out clearly that we have to deal with a new genus of the family, for which the name *Keichousaurus* is proposed with *Keichousaurus hui* (gen. et sp. nov.) as the type species. The name of the species is dedicated to Mr. C. C. Hu, the leader of the field party, who first discovered the interesting fossils. The diagnosis of the new form is as follows:—

Pachypleurosaurids in moderate size. Skull with temporal openings smaller than the nasal openings. Orbits large where the skull reaches its maximum breadth. The muzzle very small and pointed, showing faint indication of construction at the base. Teeth isodont. Vertebrae number: neck, 20, dorsal 20; sacrum, 3 or 4; tail 37. Spina dorsalis low. Neck ribs well developed. Dorsal ribs strongly pachyosteologic. Sacrum none co-ossified. Neck relatively long. Humerus and femur subequal in length, but the latter is much slender. Ulna very short and broad. Tibia and fibula also rather broad and thick. Digit of the hand: 3, 4, 4, 4, 3 and that of the foot: 2, 3, 3, 4, 2.

Our form is undoubtedly closely related to both genera *Pachypleurosaurus* and *Neusticosaurus*, but may be still more intimately related to the former. It is, however, characterized by the long stretched neck, special features of the skull (the maximum breadth lies not at the posterior lateral part of the orbit but more in front of it, and the muzzle is short and a little differentiated from the skull) and the broadness of the ulna and fibula. In addition to the very pachyostologic feature of the ribs and the largeness of the coracoid and the ischium, our form seems to be a little specialized than the European genera. Consequently, the age of the formation with the fossils may be also somewhat younger, being middle or even late middle Trias.

Keichousaurus hui represents the first record of a primitive Sauropterygia in Eastern Asia. *Metanothosaurus nipponicus* is a true Nothosauria and much larger than our form. *Sinophiosaurus weiyuanensis* belongs to the suborder Pleisiosauria and also later in age and need not be considered here.

The find of *Keichousaurus hui* in S. W. China, with the facies so similar to that of Tessenir Kalkalpen is of course of great interest. It shows how the Thethys Sea connected between western Europe and China by way of Minor Asia as revealed by the recent discovery of Professor Haas.

References

- [1] Anonymous, 1956: Tables of regional stratigraphy in China. Table 94. (in Chinese). Science Press, Peking.
- [2] Broili, F., 1927: Ein Sauropterygier aus den Aribergschichten, Sitz. Bayer. Akad. Wiss. Mathematik, Abt. pp. 205—228. Mit 1 Tafel und 5 Textfiguren.
- [3] Hsu, T. Y., 1939: 中国南部海相三叠纪之新研究, 地质论评, 卷 IV, pp. 295—314.
- [4] Huene, V. F., 1956: Palacontologie und Phylogenie der Niederen Tetrapoden, Mit 690 Abbildungen.
- [5] Peyer, B., 1932: Die Triasfauna der Tessiner Alpen, V. *Pachypleurosaurus edwardsii* Corn. spec. Abh. der Schw. Palaeontol. Gesells. Bd. LIII-18 Mit 5 tafeln und 7 Textfiguren.
- [6] Seeley, H. G., 1882: On *Neusticosaurus pusillus* (Fraas), an Amphibious Reptile having Affinities with the Terrestrial Nothosauria and with the marine Pleisiosauria, Quart. Journ. Geol. Soc. London. Vol. 38, pp. 350—366, Plate XIII and the three textfigs.
- [7] Volz, W., 1902: *Proneusticosaurus*, eine neue Sauropterygier-Gattung aus dem unteren Muschelkalk Oberschlesiens, Palaeontogr. 49, 121—162 Mit Tafel XV-XVI.
- [8] Yabe H. and Shikama, T., 1948: A lower triassic Nothosaurian from Isihu near Janaigu, Monogon, Miyagi Prefecture, Proce. Japan Academy, Vol. XXIV, No. 10, pp. 35—41, with one figure.
- [9] Young, Chung-chien, 1944: On the Reptilian Remains from Weiyuan, Szechuan, China, Bull. Geol. Soc. China. XXIV 3—4, 187—209.

图版 I 说明

胡氏贵州龙, 新属新种 (*Keichousaurus hui* gen. et sp. nov.)

图 1 正型标本 (V. 952) 的头骨, 背面观, 原大的 6 倍。

图 2 Vm002 头骨, 腹面观, 与图版 III 图 1 为同一标本, 原大的 3 倍。

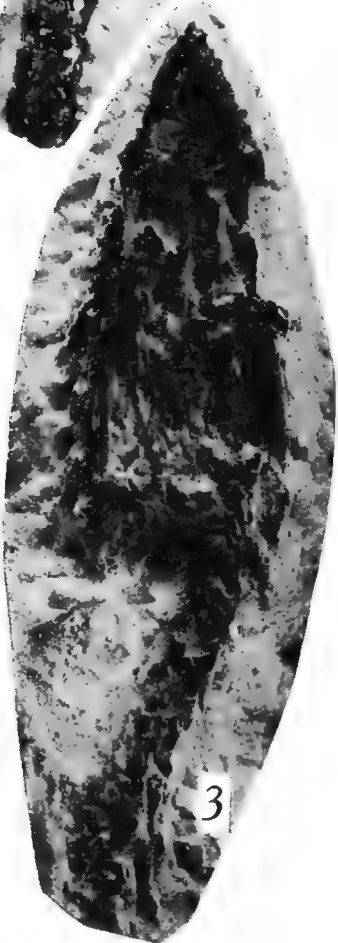
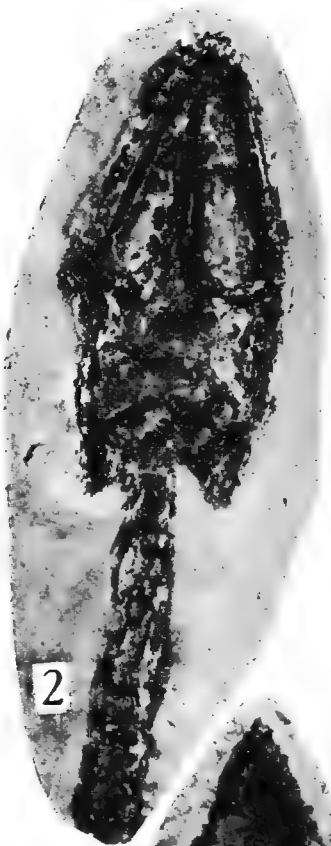
图 3 Vm0025 头骨, 腹面观, 原大的 3 倍。

Explanation of plate I

Fig. 1. *Keichousaurus hui*, gen. et sp. nov. Type skull in dorsal view (V. 952) $6\times$ nat. size.

Fig. 2. *Keichousaurus hui*, gen. et sp. nov. Skull in ventral view (Vm002) Same specimen as plate III fig. 1, $3\times$ nat. size.

Fig. 3. *Keichousaurus hui*, gen. et sp. nov. Skull in ventral view (Vm0025) $3\times$ nat. size.

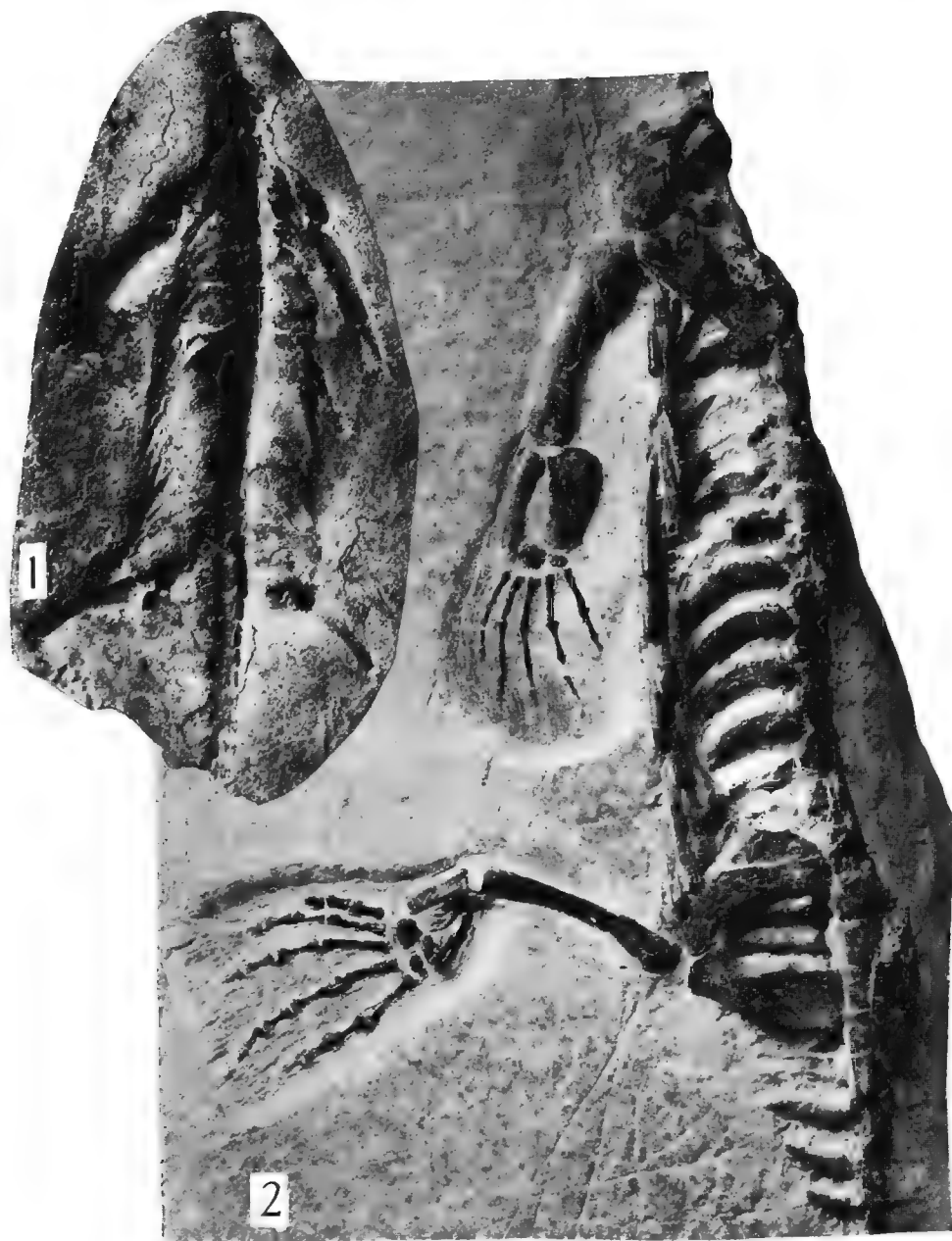


楊鍾健;貴州新發見的腫肋龍化石

Young: *On the New Pachypleurosauroidea from Keichow*

圖版 II

Plate II



图版 II 说明

胡氏贵州龙 (*Keichousaurus hui*)

图 1 一幼年个体 (Vm0013) 的反面印痕, 背面观, 原大。

图 2 V 953 的骨骼, 具有右侧前肢和后肢, 腹面观, 原大的 2 倍。

Explanation of Plate II

Fig. 1. *Keichousaurus hui*, gen. et sp. nov. Negative impression of a young individual in dorsal aspect, (Vm0013), nat. size.

Fig. 2. *Keichousaurus hui*, gen. et sp. nov. Skeleton with the right anterior and posterior limbs in ventral aspect, (V953), $2\times$ nat. size.

图版 III 說明

胡氏貴州龍 (*Keichousaurus hui*)

图 1 幼年个体的完整骨架 (Vm002), 腹面观, 原大。

图 2 幼年个体 (V956b) 的体躯和四肢, 腹面观, 原大的 3 倍。

Explanation of Plate III

Fig. 1. *Keichousaurus hui*, gen. et sp. nov. A complete skeleton, young individual, in ventral aspect, (Vm002), nat. size.

Fig. 2. *Keichousaurus hui*, A young individual with the trunk and limbs in ventral aspect, (V956b), $3 \times$ nat. size.

楊鍾健：貴州新發見的腫肋龍化石

Young: *On the New Pachyleurosauroidea from Kweichow*

版圖 III

Plate III

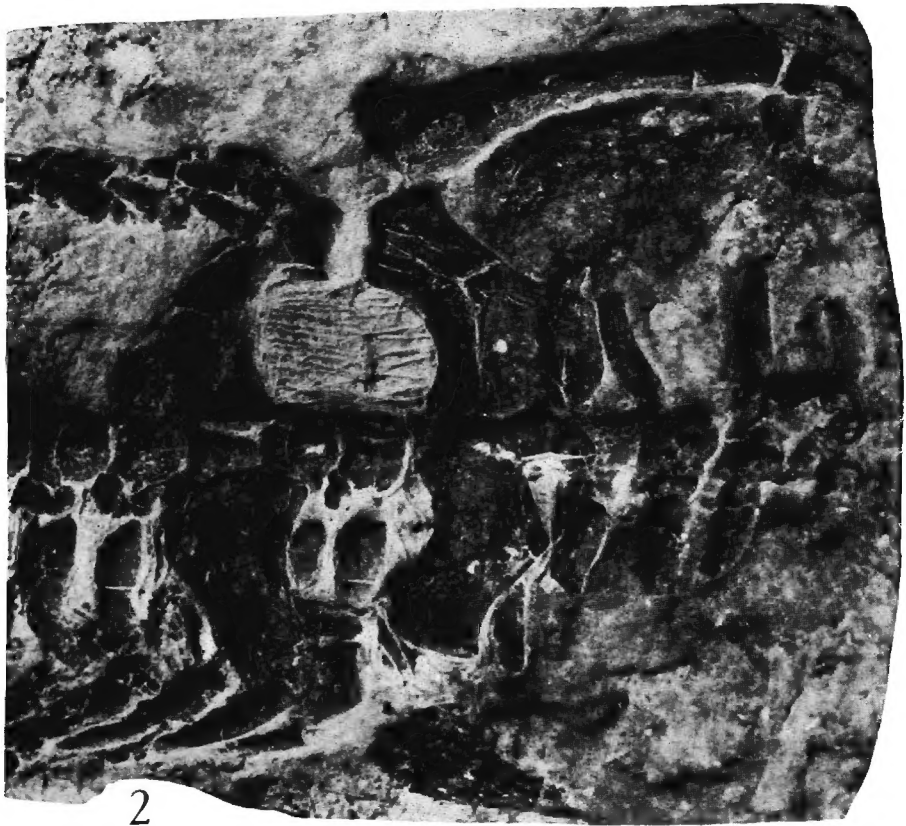


楊鍾健: 貴州新發見的腫肋龍化石

Young: *On the New Pachyleurosauroidea from Kweichow*

圖版 IV

Plate IV



图版 IV 说明

胡氏贵州龙 (*Keichousaurus hui*)

图 1 部分骨架 (Vm003), 示肩带、腰带和四肢, 原大。

图 2 与图 1 属同一标本, 示腰带, 原大的 3 倍。

Explanation of plate IV

Fig. 1. *Keichousaurus hui*, Part of a skeleton showing the pectoral and pelvic girdle and the limbs, (Vm003), nat. size.

Fig. 2. *Keichousaurus hui*, Same specimen as fig. 1, showing the pelvic girdle, $3 \times$ nat. size.

图版 V 說明

胡氏貴州龍 (*Keichousaurus hui*)

与图版 IV 图 1 为同一标本,示肩带和左肢,腹面观,原大約 3 倍。

Explanation of plate V

Fig. 1. *Keichousaurus hui*, Same specimen as plate IV fig. 1, showing the pectoral girdle and the left limb in ventral view, 3 \times nat. size.

